



ECOLOGICAL HEALTH

MAJOR ECOSYSTEM FUNCTIONING

Indicator: Great Lakes Ecosystem

The Great Lakes ecosystem represents an important and unique ecosystem. It is the largest system of fresh water in the world and provides many economic and ecological benefits to the surrounding areas. The Great Lakes basin, which includes the lakes and over 290,000 square miles of land that drains into them, supports concentrated industry and agriculture for the U.S. and Canada. These activities have taken their environmental toll on the Great Lakes as sewage, fertilizer and pesticide run-off, and industrial wastes have deteriorated water quality. In response to this, there have been many pollution prevention and clean-up efforts sponsored by local governments, the EPA and Canadian government. Long-term monitoring is necessary to track the progress of these initiatives.

Since 1994, the EPA and Environment Canada (EC) have held a biennial conference, called the “State of the Lakes Ecosystem Conference” (SOLEC). The purpose of these conferences is to focus on the Great Lakes ecosystem and to identify the great forces affecting it. Each of the four conferences held to date have led to the production of a state of the lakes report.

From the beginning, the conferences and the work done between conferences has focused energy on the development of indicator frameworks and indicators capable of describing environmental conditions in the Great Lakes. At the 1998 SOLEC conference, 79 candidate indicators were identified for eventual development and harmonization. These indicators were arrayed across six core groups. At SOLEC 2000, 25 of the indicators were selected for display with data and trends. They represent the first group of SOLEC indicators released for use. Shown below are the six core groups and those indicators included in the initial 79 candidate indicators reflecting pesticide and toxic chemical concerns that are ready for use now. The remaining indicators related to pesticide and chemical interests are not shown here since they are to be developed and released over the next several SOLEC conferences.

1. Nearshore and Open Water Indicators

- Deformities, Eroded Fins, Lesions and Tumors in Nearshore Fish
- Contaminants in Colonial Nesting Waterbirds
- Atmospheric Deposition of Toxic Chemicals
- Toxic Chemical Concentrations in Offshore Waters

2. Coastal Wetland Indicators

- Contaminants in Snapping Turtle Eggs

3. Nearshore Terrestrial Indicators

- Contaminants Affecting Productivity of Bald Eagles

4. Human Health Indicators

- Chemical Contaminants in Edible Fish Tissue
- Drinking Water Quality
- Air Quality

5. Land Use Indicators

- Brownfield Redevelopment

6. Societal Indicators

This indicator system creates an excellent framework for ecosystem indicator systems and serves as a model for other ecosystem indicator developers. Because of the cooperation between Canada and the U.S., the system further provides an example of an indicator-driven transboundary environmental management system that is well worth studying.

References

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